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## INFIRMITY AND OLD-AGE PENSIONS.

MUCH is likely to be heard ere long of schemes now being matured by leading British statesmen for a national system of Pensions for Old Age. An influential Committee of both Houses of Parliament has the subject in hand; and meantime the Foreign Office has obtained from Her Majesty's representatives in the European capitals a series of valuable Reports respecting assistance afforded or facilities given by foreign Governments to similar movements. No such assistance is given in Austria-Hungary, the Netherlands, Norway, Sweden, Spain, or Turkey; but France, Germany, Denmark, Russia, and several other countries have extensive schemes, either in immediate prospect or already in operation.

In Germany, the law of compulsory insurance against old age and infirmity—passed in June 1889—completes the programme of legislation for improving the condition of the working-classes which was set forth in the Imperial Rescript of the 17th of November 1881. It affects a portion of the population numbering more than thirteen millions, giving them an inalienable legal claim to support in cases of infirmity and in old age. The insurance is compulsory in all industrial occupations upon persons of both sexes over sixteen years of age. Clerks, trade employees, and tradesmen's apprentices who do not earn more than one hundred pounds per annum also participate; but, oddly enough, assistants and apprentices in apothecaries' shops are excluded. Exemption from compulsory insurance is granted to persons who work for food, clothes, and lodging only, and receive no pay, or who are only in temporary employment. The pension for old age varies from £5, 6s. 4d. to £9, 11s. per annum, and is granted to every insured person who has completed the seventieth year of his age, irrespective of his ability to earn a livelihood, provided that he does not already draw a pension for infirmity. The latter ranges from £5, 11s. to over £20, and is given, irrespective of age, to any person who is permanently

incapacitated from earning his living. The pension can be refused if the infirmity has been brought on wilfully or in the act of committing a crime. A person is considered infirm if unable to earn more than about one-third of his usual wage. Habitual drunkards may be made to receive their pensions entirely in kind. In such cases the pension is paid to the parish authorities, who supply the person concerned with his food, clothing, &c. In order to establish a claim to a pension under the German law, contributions, regulated by the amount of earnings, must be paid for a prescribed period. The means of paying pensions are obtained by fixed contributions from the Imperial Treasury added to regular payments on the part of the employers and employed. Side by side with this system there continues in operation the law which compels miners to become members of approved friendly societies.

In France there is still before the Chamber of Deputies a Bill in which the Government proposes an enormous development of the system of providing for old age. After 1848 a great number of projects for the benefit of the poorer workmen were brought forward; the 'right to labour and to State assistance' having been formally recognised by the Constitution. Amongst the more practical of the many well-intentioned but often hastily-evolved schemes was that of a 'Caisse de Retraite pour la Vieillesse,' which was carefully elaborated by the Labour Committee. Its object was to receive the very small deposits that labouring men were enabled to make—sums too small for the insurance companies to accept, owing to the cost and inconvenience of the largely increased clerical labour which the keeping of these small accounts would entail. The Caisse was not originally intended in any way to usurp the functions of ordinary insurance offices. The advantage granted by the State was only designed for the benefit of those who had neither the resources, experience, nor leisure to look for and find a safe and remunerative investment of their savings. The development of this

system was slow and chequered, owing to limitations introduced from time to time, on account of an excessive rate of interest not only attracting the wrong class of depositors, but also involving the State in serious loss. Deposits may be made in favour of any person over three years of age; but in the case of minors the authority of a parent or guardian is necessary. Each deposit gives the right to an annuity which is immediately fixed; and there is no obligation to continue payments at stated intervals. Deposits can be made at any time in variable sums. The depositor must mention the age at which he wishes to enjoy his pension; the age must not be less than fifty. After fixing one age for the pension on one deposit, he may name another for the pension on another. By three months' notice before the date of the term when the pension becomes due, the payment may be deferred with the view of increasing its ultimate amount; but after the age of sixty-five the pension must be taken. Payments are received in all sums from a franc upwards, without fractions of francs. The maximum annuity for one person is fifty-eight pounds, and deposits of more than forty pounds cannot be made in one year. The total value of the pensions granted since the institution of the Caisse des Retraites has been £1,956,943 to 251,084 persons; of these latter, 166,937 are still alive, receiving pensions amounting to £1,268,907. In a new and more extended scheme now under examination by the Commission du Travail, the Government propose to impose a maximum contribution of a half-penny or a penny per day on each salary, putting an equal charge on the employer of labour. Thirty years of halfpenny payments per day would produce, at the four per cent. now in force, a pension of £7, 2s.; of a penny per day, £14, 4s. It is proposed in the Bill before the Chambers that the State should add two-thirds of the amount deposited by the workmen and their employers. Every person of French nationality receiving a salary will be assumed to take the benefit of the proposed law, unless he make a declaration to the contrary before the mayor; and without such declaration every employer will be bound to deduct a halfpenny at least, or a penny at most, from the daily wage he gives, supplemented by a like sum of his own. If a workman has deposited a sum from twenty-five years—the age at which these payments begin—to fifty-five years of age, then at fifty-six years of age, and till the end of his days, he will be in receipt of his pension. In order to encourage the employment of French labour, masters who employ foreign workmen will have to pay a penny per day for each such foreigner to a fund which is for the benefit of French workmen.

A novel and highly interesting experiment in the same direction is now being made in Denmark. Not many months ago the Danish government proposed to put a new tax upon lager beer. To this the Radicals replied that, if the poor man's beer was to be taxed, the poor man ought in some way to get the advantage; and for this purpose they proposed an old-age pension scheme. The Government persisted in their beer tax, but took over the pension scheme, and made it even more Radical, inasmuch as under their plan no

contributions were to be required. Instead of contributions, they have devised an ingenious test, which makes it a necessary qualification for a pension that the applicant shall not have had recourse to the poor-law or been convicted of vagrancy during the ten years preceding the age of sixty. If he has a clean record in this respect, he may, on completing his sixtieth year and on showing proof of necessitous circumstances, lay claim to a pension of about ten pounds a year. The decision rests with the Communal Councils; and whatever funds are required, in addition to the money provided by the beer tax, will have to be found locally.

In Belgium, the legislature has recently voted, under the Budget for 1891, a credit of twenty thousand francs for giving bonuses of encouragement to recognised Mutual-help Societies, in order to facilitate the affiliation of their members to the State fund for retirement. Pensions to old workmen and their widows are granted by most of the Miners' Relief Societies throughout Belgium.

In Greece, a tax of a hundredth part of a drachma is levied on the net produce of mines, in order to form a reserve fund to assist workmen and their families in case of accident.

In Italy, the subject of State intervention in favour of pensions in cases of illness, incapacity to work, and old age, has been discussed in both the Italian Cabinet and also in the Chamber, where a project of law with that view has recently been submitted by the Ministry. It is proposed that the capital shall be derived from the sums subscribed by the workmen, increased partly by the net profits of the Postal Savings-banks, by the shares of predeceased members, &c. After twenty years from the first subscription, these amounts would be transformed into annuities and redivided per head.

Russia has made several attempts to solve the same problem; and in Switzerland an additional Article to the Constitution was voted last year by the Federal Assembly, and subsequently adopted by the people at the Referendum, empowering the Confederation to legislate on the subject of compulsory insurance against accidents and illness; but it is not the present intention of the Federal Government to include in their promised measure any scheme of insurance for old age and infirmity.

## THE IVORY GATE.\*

By WALTER BESANT.

### PROLOGUE (continued).

THE room was long rather than square, lit by two large windows, overlooking the gardens of New Square, Lincoln's Inn. The lawyer sat with his back to the fire, protected by a cane-screen, before a large table. On his left hand, at the corner of the table, stood the clients' chair: on his right hand, between the two windows, was a small table with a couple of drawers in it. And in the corner, to the left of any one writing at the small table,

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and on the right hand of the lawyer, was the open safe already mentioned. There were two doors, one communicating with the clerk's room, the other opening directly on the stairs. The latter was locked on the inside.

'Call Mr Arundel,' said the chief.

While Checkley was gone, he walked to the window and observed that any one sitting at the table could, by merely reaching out, take anything from the safe and put it back again unobserved, if he himself happened to be occupied or looking another way. His grave face became dark. He returned to his own chair, and sat thinking, while his face grew darker and his eyes harder, until Mr Arundel appeared.

Athelstan Arundel was at this time a recently admitted member of the respectable but too numerous family of solicitors. He was between two and three and twenty years of age, a tall and handsome young fellow, of a good manly type. He was an ex-articled clerk of the House, and had just been appointed a Managing Clerk until something could be found for him. The Arundels were a City family of some importance: perhaps something in a City Firm might presently be achieved by the united influence of family and money. Meantime, here he was, at work, earning a salary and gaining experience. Checkley—for his part, who was as jealous of his master as only an old servant, or a young mistress, has the right to be—had imagined symptoms or indications of a growing preference or favour towards this young gentleman on the part of Mr Dering. Certainly, he had Mr Arundel in his own office a good deal, and gave him work of a most confidential character. Besides, Mr Dering was Executor and Trustee for young Arundel's mother, and he had been an old friend and school-fellow of his father, and had known the young man and his two sisters from infancy.

'Mr Arundel,' the lawyer began. At his own house, he addressed his ward by his Christian name: in the office, as managing clerk, he prefixed the courtesy title. 'An extremely disagreeable thing has happened here. Nothing short of a forgery.—Don't interrupt me, if you please'—for the young man looked as if he was about to practise his interjections.—'It is a most surprising thing, I admit. You needn't say so, however. That wastes time. A Forgery. On the 5th of this month, three weeks ago, a cheque, apparently in my handwriting, and with my signature, so skilfully executed as to deceive even Checkley and the Manager of the Bank, was presented at my bank and duly cashed. The amount is—large—£720—and the sum was paid across the counter in ten-pound notes, which are now stopped—if there are any left.' He kept his eyes fixed on the young man, whose face betrayed no other emotion than that of natural surprise. 'We shall doubtless trace these notes, and, through them of course, the forger. We have already ascertained who presented the cheque. You follow?'

'Certainly. There has been a forgery. The forged cheque has been cashed. The notes are stopped. Have you any clue to the forgery—any suspicions?'

'As yet, none. We are only beginning to collect the facts.' The lawyer spoke in the coldest and most austere manner. 'I am laying them, one by one, before you.'

Young Arundel bowed.

'Observe, then, that the forged cheque belongs to a cheque book which has been lying, forgotten by me, in this safe for two years. Here is the book. Turn to the last counterfoil. Here is the cheque, the forged cheque, which corresponds. You see?'

'Perfectly. The book has been in the safe for two years. It has been taken out by some one—presumably the forger—the cheque has been forged: the counterfoil filled up: and the book replaced. Why was all this trouble taken? If the man had got the cheque, why did he fill up the counterfoil? Why did he return the book? I beg your pardon.'

'Your questions are pertinent. I come to the next point. The safe is never opened but by myself. It is open so long as I am in the room and at no other time.'

'Certainly. I know that.'

'Very well. The man who took out the cheque book, forged the cheque, and replaced the book, must have done it in my very presence.'

'Oh! Could not some one—somehow—have got a key?'

'I thought of that. It is possible. But the drawers are full of valuables, jewellery—curios—all kinds of things which could easily be turned into money. And they were not touched. Now, had the safe been opened by a key, these things would certainly have vanished.'

'So it would seem.'

'These are the main facts, Mr Arundel. Oh! one more. We have found the messenger who cashed the cheque. Perhaps there are one or two other points of more or less importance. There is only one more point I wish to bring before you. Of course—I make no charge—I insinuate none. But this must be remembered—there are only two persons who have had access to this safe in such a manner as to make it possible for them to take anything out of it—Checkley—'

'No—no—no,' cried the old man.

'And you yourself. At the time of the robbery, you were working at that table with the safe open and within reach of your left hand. This is a fact, mind—one of the facts of the case—not a charge.'

'What?' cried the young man, his cheek aflame—'you mean'—

'I mean nothing—nothing at all. I want you—and Checkley—who alone have used this room, not counting callers who sat in that chair—to know the facts.'

'The facts—yes—of course—the facts. Well'—he spoke rapidly and a little incoherently—'it is true that I worked here—but—oh! it is absurd. I know nothing of any cheque book lying in your safe. I was working at this table'—he went to the table—'sitting in this chair. How could I get up and search about in a safe for an unknown and unsuspected cheque book before your very eyes?'

'I do not know. It seems impossible. I only desire you to consider, with me, the facts.'

Had Mr Dering spoken just a little less coldly, with just a little less dryness in his manner, what followed would perhaps have been different.

'Yes—the facts,' repeated the young man.

'Well—let us get at the facts. The chief fact is that whoever took that cheque and filled it up must have known the existence of that cheque book more than two years old.'

'It would seem so.'

'Who could know about that old cheque book? Only one who had been about your office more than two years, or one who had had opportunities of examining the safe. Now, you sat there—I sat here—he seated himself, only turning the chair round. 'How is it possible for a man sitting here to take anything out of that safe without your seeing him? How is it possible for him, without your knowledge, to examine slowly and carefully the contents of the safe?'

'Everything is possible,' said Mr Dering, still coldly. 'Let us not argue on possibilities. We have certain facts before us. By the help of these, I shall hope to find out others.'

'At five o'clock every day I put the work in the drawer of this table and I go away.' He opened the drawer, as if to illustrate this unimportant fact. He saw in it two or three pieces of paper with writing on them. He took them out. 'Good Heavens!' he cried. 'They are imitations of your handwriting.'

Checkley crossed the room swiftly, snatched them from him, and laid them before his master. 'Imitations of your handwriting,' he said. 'Imitations—exercises in forgery—practice makes perfect. Found in the drawer. Now!'

Mr Dering looked at the papers and laid them beside the forged cheque. 'An additional fact,' he said. 'These are certainly imitations. The probable conclusion is that they were made by the same hand that forged this cheque.'

'Found in the drawer,' said Checkley, 'used by Mr Arundel. Never by me. Ah! The only two, are we? These imitations will prove that I'm not in it.'

'The fact that these imitations are found in the drawer,' said Mr Dering, 'is a fact which may or may not be important.'

'What?' cried the young man, flaring up. 'You think that I made those imitations?'

'I do not permit myself—yet—to make any conclusions at all. Everything, however, is possible.'

Then this foolish young man lost his temper and his head.

'You have known me all my life,' he cried. 'You have known me and all my people. Yet at the first moment you are ready to believe that I have committed a most abominable forgery! You—my father's oldest friend—my mother's Trustee! My own Guardian! You!'

'Pardon me. There are certain facts in this case. I have laid them before you. I have shown'—

'To suspect me,' Arundel repeated, 'and all the time another man—that man—your clerk—who knows everything ever done in this office, is in and about the place all day long.'

'The imitations,' said Checkley quietly, 'were found in his own drawer—by himself.'

'Who put them there? Who made them? You—villain and scoundrel!'

'Stop, stop,' said Mr Dering coldly. 'We go too fast. Let us first prove our facts. We will then proceed to conclusions.'

'Well, sir, you clearly believe that I forged

your name and robbed you of all this money. I have not got ten pounds in the world; but that is not, I suppose, a fact which bears on the case. You think I have seven hundred pounds somewhere. Very good. Think so, if you please. Meanwhile, I am not going to stay in the service of a man who is capable of thinking such a thing. I leave your service—at once. Get some one else to serve you—somebody who likes being charged with forgery and theft.' He flung himself out of the room and banged the door behind him.

'He has run away,' said Checkley. 'Actually, run away at the very outset! What do you think now?'

'I do not think. We shall, I daresay, find out the truth in due course. Meantime, these documents will remain in my keeping.'

'Only, I hope, sir,' the clerk began, 'that after what you've just seen and heard, after such insolence and running away and all'—

'Don't be an ass, Checkley. So far as appearances go, no one could get at the safe except you and Arundel. So far as the ascertained facts go, there is nothing to connect either of you with the thing. He is a foolish young man; and if he is innocent, which we must, I suppose, believe—but his look did not convey the idea of robust faith—he will come back when he has cooled down.'

'The imitations of your handwriting in his drawer'—

'The man who forged the cheque,' said Mr Dering, 'whoever he was, could easily have written those imitations. I shall see that hot-headed boy's mother, and bring him to reason.—Now, Checkley, we will resume work. And not a word of this business, if you please, outside. You have yourself to think of as well, remember. You, as well as that boy, have access to the safe. Enough—enough.'

Athelstan Arundel walked home all the way, foaming and raging. No omnibus, cab, or conveyance ever built could contain a young man in such a rage. His mother lived at Pembridge Square, which is four good measured miles from Lincoln's Inn. He walked the whole way, walking through crowds, and under the noses of dray-horses, carriage-horses, and cart-horses, without taking the least notice of them. When he reached home, he dashed into the drawing-room, where he found his two sisters—Hilda and Elsie—one of them a girl of eighteen, the other of thirteen. With flaming cheeks and fiery eyes, he delivered himself of his story: he hurled it at their heads: he called upon them to share his indignation, and to join with him in scorn and contempt of the man—their supposed best friend, Trustee, Guardian, Adviser—their father's best friend—who had done this thing—who had accused him, on the bare evidence of two or three circumstantial facts, of such a crime!

There is something magnetic in all great emotions: one proof of their reality is that they are magnetic. It is only an actor who can endow an assumed emotion with magnetism. Elsie, the younger girl, fell into a corresponding sympathy of wrath: she was equal to the occasion: passion for passion, she joined him and fed the flame. But—for all persons are not magnetic—the elder sister remained cold. From time to



time she wanted to know exactly what Mr Dering had said : this her brother was too angry to remember : she was pained and puzzled : she neither soothed him nor sympathised with him.

Then the mother returned, and the whole story was told again, Elsie assisting. Now, Mrs Arundel was a woman of great sense : a practical woman : a woman of keen judgment. She prided herself upon the possession of these qualities, which are not supposed to be especially feminine. She heard the story with disturbed face and knitted brow.

'Surely,' she said, 'what you tell me, Athelstan, is beyond belief. Mr Dering, of all men, to accuse you—you—of such a thing ! It is impossible.'

'I wish it was impossible. He accuses me of forging that cheque for £720. He says that while I was working in his office for him, a fortnight ago, I took a certain cheque book out of the safe, forged his writing on a cheque, and returned the cheque book. This is what he says. Do you call that accusing, or don't you ?'

'Certainly. If he says that. But how can he—Mr Dering—the most exact and careful of men ? I will drive to Lincoln's Inn at once and find out. My dear boy, pray calm yourself. There is—there must be—some terrible mistake.'

She went immediately ; and she had a long interview with the solicitor.

Mr Dering was evidently much disturbed by what had happened. He did not receive her as he usually received his clients, sitting in his arm-chair. He pushed back the chair and stood up, leaning a hand on the back of it, a tall, thin, erect figure, gray-haired, austere of face. There was little to reassure the mother in that face. The very trouble of it made her heart sink.

'I certainly have not accused Athelstan,' he said. 'It is, however, quite true that there has been a robbery here, and that of a large sum of money—no less than £720.'

'But what has that to do with my boy ?'

'We have made a few preliminary inquiries. I will do for you, Mrs Arundel, what I did for your son, and you shall yourself understand what connection those inquiries have with him.'

He proceeded coldly and without comment to set forth the case so far as he had got at the facts. As he went on, the mother's heart became as heavy as lead. Before he finished, she was certain. There is, you see, a way of presenting a case without comment which is more efficacious than any amount of talk ; and Mrs Arundel plainly perceived—which was indeed the case—that the lawyer had by this time little doubt in his own mind that her son had done this thing.

'I thought it right,' he continued, 'to lay before him these facts at the outset. If he is innocent, I thought, he will be the better able to prove his innocence, and perhaps to find the guilty person. If he is guilty, he may be led to confession or restitution. The facts about the cheque book and the safe are very clear. I am certain that the safe has not been opened by any other key. The only persons who have had access to it are Checkley and your son Athelstan. As for Checkley—he couldn't do it, he could not possibly do it. The thing is quite beyond him.'

Mrs Arundel groaned. 'This is terrible,' she said.

'Meantime, the notes are numbered : they may be traced : they are stopped : we shall certainly find the criminal by means of those notes.'

'Mr Dering'—Mrs Arundel rose and laid her hand on his—'you are our very old friend. Tell me—if this wretched boy goes away—if he gives back the money that remains—if I find the rest—will there be—any further—investigation ?'

'To compound a felony is a crime. It is, however, one of those crimes which men sometimes commit without repentance or shame. My dear lady, if he will confess and restore—we shall see.'

Mrs Arundel drove home again. She came away fully persuaded in her own mind that her son—her only son—and none other, must be that guilty person. She knew Mr Dering's room well : she had sat there hundreds of times : she knew the safe : she knew old Checkley. She perceived the enormous improbability of this ancient clerk's doing such a thing. She knew, again, what temptations assail a young man in London : she saw what her Trustee thought of it : and she jumped to the conclusion that her son—and none other—was the guilty person. She even saw how he must have done it : she saw the quick look while Mr Dering's back was turned : the snatching of the cheque book : the quick replacing it. Her very keenness of judgment helped her to the conviction. Women less clever would have been slower to believe. Shameful, miserable termination of all her hopes for her boy's career ! But that she could think of afterwards. For the moment the only thing was to get the boy away—to induce him to confess—and to get him away.

He was calmer when she got home, but he was still talking about the thing : he would wait till the right man was discovered : then he would have old Dering on his knees. The thing would be set right in a few days. He had no fear of any delay. He was quite certain that it was Checkley—that old villain. Oh ! He couldn't do it by himself, of course—nobody could believe that of him. He had accomplices—confederates—behind him. Checkley's part of the job was to steal the cheque book and give it to his confederates and share the swag.

#### ROMANCE OF THE TELEGRAPH.

A CERTAIN romantic interest has clung to the telegraph from the beginning, in spite of its utilitarian character. The idea of two friends corresponding at a distance by means of two magnetic needles having a sympathy in their movements was emitted by John Battista Porta, the Neapolitan philosopher, in the sixteenth century, and took hold of the popular imagination. Addison has an amusing paper in the 'Spectator,' in which he represents two lovers conversing with each other in secret by the sympathetic stone. A veil of mystery still hangs around the first plan for an electric telegraph, communicated to the 'Scots Magazine' for 1753 by one 'C. M.' of Renfrew. Even the name of this obscure and modest genius is doubtful ; but it is probable that he was Charles Morrison, a

native of Greenock, who was trained as a surgeon. At this period only the electricity developed by friction was available for the purpose, and being of a refractory nature, there was no practical result.

But after Volta had invented the chemical generator or voltaic pile in the first year of our century, and Oersted, in 1820, had discovered the influence of the electric current on a magnetic needle, the illustrious Laplace suggested to Ampère, the famous electrician, that a working telegraph might be produced if currents were conveyed to a distance by wires, and made to deflect magnetic needles, one for every letter of the alphabet. This was in the year 1820; but it was not until sixteen years later that the idea was put in practice. In 1836 Mr William Fothergill Cooke, an officer of the Madras army, at home on furlough, was travelling in Germany, and chanced to see at the university of Heidelberg, in the early part of March, an experimental telegraph, fitted up between the study and the lecture theatre of the Professor of Natural Philosophy. It was based on the principle of Laplace and Ampère, and consisted of two electric circuits and a pair of magnetic needles which responded to the interruptions of the current. Mr Cooke was struck with this device; but it was only during his journey from Heidelberg to Frankfurt on the 17th of the month, while reading Mrs Mary Somerville's book on the *Correlation of the Physical Sciences*, that the notion of his practical telegraph flashed upon his mind. Sanguine of success, he abandoned his earlier pursuits and devoted all his energies to realise his invention. The following year he associated himself with Professor Wheatstone; a joint patent was procured; and the Cooke and Wheatstone needle telegraph was erected between the Euston Square and Camden Town stations of the London and Birmingham Railway. To test the working of the instruments through a longer distance, several miles of wire were suspended in the carriage-shed at Euston, and included in the circuit. All being ready, the trial was made on the evening of the 25th of July 1837, a memorable date. Some friends of the inventors were present, including Mr George Stephenson and Mr Isambard Brunel, the celebrated engineers. Mr Cooke, with these, was stationed at Camden Town, and Mr Wheatstone at Euston Square. The latter struck the key and signalled the first message. Instantly the answer came on the vibrating needles, and their hopes were realised. 'Never,' said Professor Wheatstone—'never did I feel such a tumultuous sensation before, as when, all alone in the still room, I heard the needles click; and as I spelled the words I felt all the magnitude of the invention, now proved to be practical beyond cavil or dispute.'

It was in 1832, during a voyage from Havre to New York in the packet *Sully*, that Mr S. F. B. Morse, then an artist, conceived the idea of the electro-magnetic marking telegraph, and drew a design for it in his sketch-book. But it was not until the beginning of 1838 that he and his colleague, Mr Alfred Vail, succeeded in getting the apparatus to work. Judge Vail, the father of Alfred, and proprietor of the Speedwell iron-works, had found the money for the experiments; but as time went on and no result was achieved,

he became disheartened, and perhaps annoyed at the sarcasms of his neighbours, so that the inventors were afraid to meet him. 'I recall vividly,' says Mr Baxter, 'even after the lapse of so many years, the proud moment when Alfred said to me, "William, go up to the house and invite father to come down and see the telegraph-machine work." I did not stop to don my coat, although it was the 6th of January, but ran in my shop-clothes as fast as I possibly could. It was just after dinner when I knocked at the door of the house, and was ushered into the sitting-room. The judge had on his broad-brimmed hat and surtout, as if prepared to go out; but he sat before the fireplace, leaning his head on his cane, apparently in deep meditation. As I entered his room he looked up and said, "Well, William?" and I answered: "Mr Alfred and Mr Morse sent me to invite you to come down to the room and see the telegraph-machine work." He started up, as if the importance of the message impressed him deeply; and in a few minutes we were standing in the experimental room. After a short explanation, he called for a piece of paper, and writing upon it the words, "A patient waiter is no loser," he handed it to Alfred, saying, "If you can send this, and Mr Morse can read it at the other end, I shall be convinced." The message was received by Morse at the other end, and handed to the judge, who, at this unexpected triumph, was overcome by his emotions.'

The introduction of the telegraph by land or sea has been attended with numerous adventures, especially in wild countries, but few of these have been recorded. One of the most romantic expeditions was that of the Western Union Telegraph Company of America, who in 1865 projected an overland telegraph from the United States to Europe via Behring Strait. Parties were sent out to explore the route and build the line through British Columbia, Alaska, and Siberia as far as the Amur River; and during the three years of the work they encountered many hardships and privations. One of a band was lost in the thick woods of Vancouver Island, and though he could hear the bugle calls of the searching-party, he was too exhausted to respond. On the fourth day of his wandering he wrote his will in pencil on his pocket-handkerchief; but soon afterwards he stumbled on the trail, where some hunters found him lying insensible. Another, while chasing cariboo on the Upper Fraser River, was lost for two weeks. In climbing a tree to spy his position, a branch gave way, and he fell to the ground. Stunned and bruised, he lay there for two days, then managed to reach the bank of the Fraser. He constructed a raft of logs and floated down the current; but after a time the raft stuck on a bar and afterwards floated away without him. By following the stream he at length came to a clearing in the forest, and was saved by Chinese settlers. For twelve days he had lived on the bulbs of the gamass, a species of lily, and on berries gathered amongst the trees. In Siberia, during winter, one at least of the expedition was frozen to death on the steppes, and others nearly starved for want of provisions.

Working the telegraph, though in general monotonous, is frequently enlivened by an interesting or exciting message. Such, for example,

was the despatch received in Washington, United States, on the morning of the 3d of April 1865, which announced the fall of Richmond and the termination of the great rebellion. About half-past nine, while Mr William E. Kettles, a boy operator of fifteen, was engaged in the Washington office attending to the service of the line which ran to Fortress Monroe, he was startled by a call from there to 'Turn down for Richmond, quick!' With trembling fingers he obeyed, and in another moment the signal from Richmond flashed along the wire. 'Do you get me well?' they said. 'I do: go ahead,' was the reply.—'All right. Here is the first message for four years—Richmond, Va., April 3d, 1865. Hon. E. M. Stanton, Secretary of War; we entered Richmond at eight o'clock this morning.—G. Weitzel, Brigadier-General, commanding.'

Kettles copied the message, he knew not how, and rushed with it into the room of General Eckert, Assistant Secretary of War, where he found President Lincoln conversing in a low tone with Mr Tinker, a cipher clerk. As Kettles handed the despatch to Tinker, the President, catching sight of its purport, bounded from the room, with a hop, skip, and jump, exclaiming, 'Clear the track!' and made for the door of Secretary Stanton. The tidings flew like wildfire; and soon the operating room was filled with officers of state, and the building was besieged by an enthusiastic crowd, who demanded a speech from the distinguished Kettles.

The telegraph played an important part in the American Civil War, and many daring deeds were perpetrated in cutting the wires or 'tapping' them to filch the messages. Some of the operators of the military service were so expert as to receive the messages on their tongues by the 'taste' of the current. In the Franco-German War of 1870 the uhlands in particular played havoc with the French wires. On arriving at a village they would ride up to the telegraph office, cut the connections, and carry off the apparatus, or else employ it to deceive the enemy. They were outwitted, however, on one occasion, and by a woman. Mademoiselle Juliette Dodu, a girl of eighteen, was director of the telegraph station at Pithiviers, where she lived with her mother, when the Prussians entered the town. They took possession of the station, and turning out the two women, confined them to their dwelling on a higher floor. It happened that the wire from the office in running to the pole on the roof passed by the door of the girl's room, and she conceived the idea of tapping the Prussian messages. She had contrived to keep a telegraph instrument, and by means of a derivation from the wire was able to carry out her purpose. Important telegrams of the enemy were thus obtained, and secretly communicated to the sub-prefect of the town, who conveyed them across the Prussian lines to the French commander.

Mademoiselle Dodu and her mother were both arrested, and the proofs of their guilt were soon discovered. They were brought before a court-martial, and speedily condemned to death; but the sentence had to be confirmed by the commander of the corps d'armée, Prince Frederick Charles, who, having spoken with Mademoiselle Dodu on several occasions, desired her to be produced. He inquired her motive in committing

so grave a breach of what are called the 'laws of war.' The girl replied: 'Je suis Française' (I am a Frenchwoman). The Prince confirmed the sentence; but happily, before it was executed, the news of the armistice arrived and saved her life. In 1878 this telegraphic heroine was in charge of the post-office at Montreuil, near Vincennes; and on the 13th of August she was decorated with the Legion of Honour by Marshal Macmahon, President of the Republic.

The ignorance and superstition of natives unacquainted with Western civilisation have been a fruitful source of incident, both comical and tragical, in telegraph experience. In China, when the telegraph line was built at Foochow from the pagoda to the foreign settlement, the people broke it every night, believing it would spoil the 'fung-shui' or good-luck of the district, and the mandarins winked at the destruction.

The Arabs, as a rule, have taken kindly to the telegraph, partly, it is thought, because the word is readily understood by them, 'tel' meaning wire, and 'araph,' to know, in Arabic, so that 'telaraph' becomes to learn by wire. The Indians at the Baird fishing-station on McCloud River, California, call the telephone 'Klesch-teen' or the 'Speaking Spirit,' and regard it as a 'great medicine.' The red men have been taught by the cunning Yankees to respect the telegraph. When the overland line across the prairies was completed between Fort Kearney and Laramie, Mr Creighton invited the chief of the Arapahoes at Fort Kearney to hold a palaver with his friend the chief of the Sioux at Fort Laramie. The two Indians exchanged telegrams, and were deeply impressed with the fact. Mr Creighton said the telegraph was the voice of the Manitou or Great Spirit; and to carry conviction, he suggested that they should meet each other half way along the line, which was about five hundred miles in length. The chiefs started on horseback, met, and compared notes. The story spread among the tribes; and ever after, it is said, the line and instruments were unmolested, though the linesmen might be killed and the stations threatened.

The duty of a linesman is to keep the wire in repair, and in wild countries it is frequently a hazardous occupation. In journeying along the line many miles from the distant station, he is sometimes picked off by the lurking savage, or drowned in crossing some swollen creek. In 1867 Mr W. Thompson, a repairer of the Union Pacific Railway Company, was travelling on a hand-car with five others, beyond the Plum Creek Station, looking out for a break in the line, when they were suddenly fired on by a band of Indians. Thompson was shot and scalped, and left for dead. But not long afterwards he walked into the station bringing the scalp in his hand. It had been dropped by one of the Indians, and picked up by its owner. According to our authority (the 'Telegrapher' for August 31, 1867), a doctor of Omaha was of opinion that he might be able to replace it!

The Australian blacks, who are so low in the scale of humanity, have proved very hostile to the telegraph. They are apt to cut the wire to tip their spears with it, and break the insulators to make scrapers of the sharp edges.



Some of the stations on the great overland wire which crosses the continent from Adelaide on the south coast to Port Darwin on the north, where it meets the cables from Europe, are built in the manner of a fortress. Such is the station at Barrow's Creek, about twelve hundred miles north of Adelaide, which was the scene of a desperate attack by the natives in 1874. This lonely outpost of civilisation stands on the bank of a stony creek in the middle of a wide plain, covered with dried grass and stunted bushes, broken with patches of sombre forest or tangled scrub, and the blue range of some low hills fading in the distance. The buildings were of rough-hewn stone, loopholed for musketry, and roofed with iron. They formed three sides of a square, embracing a courtyard, which was closed by a massive gate, the only entrance to the station. The place was garrisoned by a staff of eight, including Mr Stapleton, the telegraph master, six operators, linesmen or servants, and a native boy christened Frank.

Mr James L. Stapleton, or 'Stape' as he was familiarly called, had been a free operator in America for over twenty years, roving from line to line as whim or opportunity directed, now plying his 'key' in the airiest of costumes amid the jungles of the tropics and the haunts of the dreaded 'vornito'; again shivering in furs beside his 'speaker' among the snows of the north, from the Panama and Aspinwall line to the Grand Trunk of Canada. In 1858 he wandered to Australia, and worked on the Victorian lines for ten years. At length he was appointed to the charge of the maintenance station at Barrow's Creek; and leaving his wife in North Adelaide, departed for the interior, hoping to spend his days in rest and quiet there.

About eight o'clock on Sunday evening, February 22, 1874, all the staff were outside the station, enjoying the pure air of the plains and the mellow light of the sunset. One or two are said to have been bathing in the creek; while others were smoking their pipes and chatting with the 'boy' Frank, whom they proposed to send up the line on horseback with one of the linesmen, when a large band of natives suddenly showed themselves at the eastern corner of the station, and launched a volley of spears at them. Being unarmed, they sprang to their feet, and made a rush for the entrance to the fort, but ere they could reach it were scattered by another shower of weapons. Retreat being cut off, they ran round the building, thinking the blacks would follow them. The ruse succeeded; and at the next venture they gained the courtyard and shut the gate. Though several were wounded, they were all inside except the boy Frank, who, however, was saved by being dragged in through one of the barred windows in the front of the station. Those who were able armed themselves with rifles, and three shots were fired through the openings at the body of natives where they assembled, some twenty yards distant. These drew off hastily, but gathered again at a point a hundred yards off, when two other shots were fired at them. All was quiet during the night; but about seven o'clock next morning the blacks were seen to approach again, all armed, and evidently bent on a fresh attack. But they were

dispersed by four rifle-shots while they were yet at a distance of five hundred yards. An examination of the injured showed that Mr Stapleton had been deeply gashed with a spear in the left side, and also cut in the left thigh. John Frank, a linesman, had been speared on the right side, the blade traversing his heart and the tip protruding from his back in a downward slant. He died as soon as he entered the kitchen of the fort. Flint, an operator, was speared in the upper part of the leg to the very bone; Gason, a police trooper, was also injured; and the boy Frank had a hurt below the right collar-bone, a spear-cut between two of his left ribs, and his right hand badly torn. Stapleton's condition was critical, and a telegram was sent to Adelaide, describing the nature of his injuries and asking for medical advice. This was done by Mr Flint, although he was bed-ridden and suffering intense pain. Dr Gosse of Adelaide prescribed by telegraph; but the remedies proved ineffectual. When Stapleton was sinking fast, his wife came to the telegraph office at South Adelaide to communicate with her dying husband, who on his part whispered his last wishes to the wounded operator at Barrow's Creek; and thus, although separated by twelve hundred miles of scrub and desert, these two exchanged a solemn and sad farewell. Stapleton was buried next day, the 24th of February, while the natives sullenly watched the rites from a distance.

Disease is a more fatal enemy to the telegraph clerk than the savage. His calling often takes him into climes and localities to which his constitution is unsuited. In the hotter countries, for example, hundreds of operators have succumbed to the malaria or yellow fever. During the fall of 1878, an epidemic of yellow fever broke out in the Southern States of America, in particular at Key West, New Orleans, and Granada. Business was entirely suspended; there was an exodus of the rich; but the poor whites and the blacks were rendered destitute and unable to flee from the scourge. Fever and starvation went hand in hand. In such a condition of things the telegraph is the only mode of communication between the infected districts and the outer world, the only means of getting medical aid and supplies, or of directing doctors and the officers of public health. A few of the telegraph clerks took fright, and fled to the north on this occasion; but most of them continued at their posts, and volunteers supplied the places of those who deserted or died in the execution of their arduous duties; for at such a time the work is redoubled, and the operator, exhausted in mind and body by the continual strain, is very liable to catch the fever. In Granada at one time all the telegraphists succumbed to the pestilence except Mr William W. Redding, a railway operator, who, being left alone, was the sole link between the stricken community and their sympathising countrymen. The traffic of the town itself was great; but he managed by incessant labour to sustain it and to send reports of its condition to the 'New York Times' and the 'Cincinnati Inquirer.' At the end of one of his despatches to the 'Inquirer' he expressed a fear that he could not write coherently, as the room in which he worked contained four persons down with the fever, and one corpse. These were his wife, his



mother, and two sisters; the corpse was that of his child. At last, however, he was seized, and died—as true a hero as ever lost his life upon the field of battle.

More recently, when the yellow fever broke out in Florida in the autumn of 1888, a young lady named Miss Mamie Davis kept her post in the Telephone Exchange of Jacksonville when all the other operators were stricken with the disease. She sat at the switch-board from morning till night, snatching hurried bites of food between the calls for doctors, undertakers, ambulances, and so forth, and apparently without thinking that she was doing anything unusual or brave.

Overwork itself has claimed its victims in America, where competition is perhaps more severe than in the government telegraphs of Europe. In 1884 an operator known as 'Ned Cummins,' and employed in a Virginian office, was receiving a press report, when he signalled to the sending operator at the other end of the line: 'Been spitting blood lately—take it easy.' Directly afterwards he fell from his chair dead; but there was no delay in the press report, for another took his place and wired the sending clerk: 'Cummins just died; I'm his substitute. Go ahead after "address"—that being the last word written by Cummins when he was called away.

About the same time another operator, 'Monk Monroe,' finding himself while in the midst of his work stricken with the blindness of death, had just time to signal on the wire, 'Send a doctor; I'm going up the hill.' He was found 'relieved' for ever, with his hand still resting on the key.

## SUNSTRUCK.\*

### CHAPTER IV.

DAYS of hard work beneath the torrid sun, and nights without rest, when freeman and bondman toiled together beneath the dim light of many lanterns. Gun and shot and heavy stores were landed; but the ship stuck fast, as if her keel were firmly wedged in the rocks.

Then the whole crew, reinforced by a hundred of the blacks from the plantation, ran from side to side, to the great delight of the slaves, to whom the rhythmic motion seemed a kind of dance, to which they set up one of their weird choruses, caught by the Jacks at once, and trolled out with all the force of their powerful lungs; but that night and another passed. The ship had not moved.

'*Nil des.*, captain,' said Greville. 'The weather has held right and we may do it yet.'

'But I am beginning to despair, sir,' said the captain wearily.

'Let's see what to-morrow brings forth,' said Greville.

It brought forth what neither expected.

Burns, who was working literally like a slave, side by side with Manton in the hot sun, helping

the men to get up ballast from the hold, suddenly dropped as if he had received a bullet.

The doctor was hurried to the poor fellow's side, and pronounced the attack to be due to over-exertion in the heat.

Both the captains came; and the doctor gave orders for the stricken man to be carried below, when Greville interposed.

'No, no, captain,' he said; 'it is like condemning the poor fellow to death. The heat and noise will increase his fever. Let him be carried ashore to my house. Two of the women on the estate are excellent nurses.'

Captain Lance glanced at the doctor, who nodded.

'It will be the saving of his life,' he said.

'I don't like trespassing on you further, Mr Greville.'

'Captain Greville, if you please,' said the planter stiffly.

'Captain Greville. But if you will have the poor fellow for a day or two.'

'I shall be hurt if you do not send him,' was the reply.

The result was that the captain's gig was manned, and it became Manton's duty to see his friend safely up to the plantation house, the surgeon being one of the party.

'Is he very bad, doctor?' said Manton as they were rowed over the sea, which shone like hot metal.

'Very bad, poor lad. You see the exertion has been terrible. He has not spared himself a bit.'

'Officers must set a good example,' said Manton sadly; and then, noting for the first time the figure of one of the plantation blacks in the bows, he flushed a little, and said sharply: 'Hullo, my man, getting away from the work?'

'Mass' Cap'n say Negus go up to house tell um get room ready.'

'I beg his pardon,' said Manton; 'I misjudged him.—Poor old Will! you mustn't let him slip through your fingers, doctor.'

'I shall do my best, and I counsel you to take warning and be careful. The work under this sun is too much. Why, the very birds and insects get into the shade, while we human beings keep on toiling regardless of the heat.—Ah, here we are,' he continued as the boat's bow grated on the sand. 'How are we to get him up? Ah! Good gracious! Why, the side of the boat literally burned my hand.'

'We will get him carefully on to this sail,' said Manton, as the black went off at a trot for the house. 'Three men on each side to hold the canvas. He'll ride easily enough then.'

'Capital!' said the doctor; and he stood looking on as the young lieutenant was tenderly lifted out of the boat and placed upon the spread-out sail where it had been stretched upon the sands.

'Now, my lads, lift—all together,' said Manton. 'Keep step. Go slowly.—No, no, my lad,' he continued, as he bent down; 'take hold this way. That's right. Now together. Lift. Forward.—That sand glows like fire, doctor,' he added. 'Seemed quite to scorch my face.'

'Why, Manton, man—what is it? Hold up!'

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'Yes,' said the young man thickly, 'sand—glows—I—what?—my head—feels'—

He made a sudden snatch at vacancy, reeled, and was saved from falling by the surgeon lowering him down on a patch of green growth just beyond the sand.

'Is he ill too, sir?' said one of the men respectfully, for they had halted as soon as they saw their officer down.

'Ill too, my lads,' said the surgeon bitterly. 'Struck down. We cannot leave him here till we get the other up.'

'No, sir,' said the man; 'we can take him too.' 'Impossible.'

'Not it, sir, if we lay 'em crostways. There's three on us to each; and if we says we will, we will; eh, messmets?'

'Ay, ay,' came in a low deep growl, full of willingness to help; and a few minutes after they were going slowly up toward the house with their double load; but it was lightened before they were half-way there, for the messenger came back with another stalwart black, the negroes each seizing a side of the sail; and a few minutes later they reached the shade of the broad veranda, and then bore the two sick men into the dark, cool hall, a couple of elderly black women coming forward to meet them, but only to stop as Renée and Josephine stepped out from one of the side-rooms.

The doctor started, and took off his hat.

'I beg pardon,' he stammered; 'I was not aware'—

'The room is ready,' said Renée.

'Thank you, my dear young lady, thank you; but, unfortunately, another of our officers has been taken ill on the road.'

'Another room shall be prepared directly,' said Renée quietly. 'Josee, dear, will you ask'—

She did not finish her sentence, being struck by her companion's manner, for Josephine had snatched a vessel of cold water from a table in the hall, soaked her handkerchief therein, and was bending down now over Manton, with a look in her eyes entirely fresh. But the next minute she seemed to realise what was required, and hurried away to see to the preparation of another room.

'Humph!' muttered the doctor; 'he said he had good nurses up at the house. If I were down, and had such nurses as these, I should never want to get well.—Eh? I beg your pardon,' he added with some confusion, for Renée had spoken.

'I said, would you tell your men to carry the gentlemen to their rooms?'

'Yes, yes; thank you. Of course,' cried the doctor.—'Now, my lads, carefully. One at a time.'

'Hah!' he muttered, half an hour later, as he looked down at his patients in their tastefully arranged, well-ventilated bedrooms. 'Very nice. Ten times the chance of getting better; but—but— Oh, dear me! I'm rather afraid of this arrangement turning out all wrong.'

#### CHAPTER V.

A ship is always called 'she,' and there are plenty of unkind misogynists who sneeringly say it is because a vessel is as capricious as a woman.

Certainly the sloop of war wedged in the coral rock a quarter of a mile from the shore was capricious enough. Everything had been done in the way of lightening her; the crew and their black auxiliaries had tramped and danced from side to side, and the two captains stood together one glorious evening gazing at each other in despair. They had become very friendly; for Captain Greville, in spite of his long absence from the sea, had proved himself to be a ripe sailor; and Captain Lance had soon thrown aside all punctilio, and gladly availed himself of plenty of sound advice.

'No, sir,' said Greville, 'I can do no more. I am at my wits' end. It is piteous, though. Such a fine vessel and quite uninjured. Lance, I'm sorry for you.'

'It's maddening,' said the latter. 'Wrecked my ship in a calm. They'll never give me another.'

'No; I'm afraid not,' said Greville. 'You'll have to do as I do: turn planter.'

'If we could only have got an anchor down, and the capstan manned.'

'Yes. But impossible; there are goodness knows how many hundred fathoms below us here. We ought to have got her off. The weather, too, has been perfect. Give the men a rest for a few hours, and let's see if we cannot hit out some other plan.—Here; I have it. Let's get the guns aboard again all aft, and fire a salvo. That might start her, and— Hurrah! Cheer, my lads, cheer!'

The men responded with a wild shout, in which the blacks took part, for, as the two captains were speaking, the swell, which had for days past been rolling in so gently, pressed slowly and heavily against the stern of the ship, and seemed to glide under her; she careened over a little to starboard, and then lifted and slowly drifted off into deep water, her masts describing an arc across the sky.

The next moment the two officers had grasped hands.

'Greville,' said Captain Lance, in a voice full of emotion, 'you have saved me, my ship, and my future prospects as an officer. Now, then, what is to be done?'

'Get your guns and stores on board, man,' said Greville bluntly.

'Of course, but I mean about you. Shall you claim salvage?'

'Of course not.'

'Then the government must'—

'Leave me alone,' said Greville interrupting. 'What! do you want them to give me a command?'

'Yes: why not?'

'No: that's all over. I'm afraid I was not a good officer. My fate went another way. I'm happy enough here with my two dear girls and my black people.'

'Yes, but you must have some reward.'

'Give it me then—the thanks of a brother-officer.'

'You've had that from the first. But your men?'

'My blacks? Get the work done, man; and then rig up an awning all over the deck, give them a hearty meal, and then make the fiddler strike up, and let them dance and sing. I'll

give your boys a treat ashore.—There, get your boats out and sound for an anchorage. You'll get one under the shelter of that headland. I'm as glad as an old sailor can be who has had the pleasure of saving one of the king's ships.'

That night *The Queen* lay snugly at anchor; and the next morning the boats began going to and fro to embark guns, ammunition, and stores once more. Then in due course followed the entertainments to the blacks and the sailors, and the announcement that the ship would continue her journey farther south.

Captain Greville was on board on the eve previous to their setting sail, when the doctor came up to make his report after being ashore.

'Well,' said the captain; 'how are your patients?'

'The two lads who were hurt by the slipping of that gun are getting on well. They are coming aboard to-night as soon as it's a bit cooler.'

'Yes; but Manton and Burns?' said Captain Lance impatiently.

'They are getting better. The crisis is past, and it is only a question of nursing now.'

'That's right,' said the captain; and Greville raised his brows and looked sharply from one to the other. 'Take the gig to-night and some bedding, and superintend the poor fellows being brought aboard.'

'What for?' said Greville bluntly. 'Do you want to begin your voyage with a couple of funerals at sea?'

'My dear sir!'

'Well, I'm right,' said Greville. 'The poor fellows are mere shadows. It would kill them if they were moved.—Wouldn't it, doctor?'

'In a few hours,' said the doctor decisively.

'Tut—tut—tut—tut!' ejaculated Captain Lance. 'What am I to do? I can't sail without my officers.'

'You would have to if they died,' said Greville. 'There; go on, and call for them as you come back from the south. Going right down to the Falklands, aren't you?'

'Yes; but those two poor lads!'

'They'll be all right. I think we can nurse them back to health.'

'But it is not fair to leave them on your hands, Greville.'

'Nonsense! Then I'll keep account of the cost, and send you in a bill.'

'You will?' cried Captain Lance eagerly.

'No; I won't, man. Hang it all! I thought we two were getting to be quite friends.'

'And so we are,' cried Captain Lance.—'But, doctor, what do you say?'

'That it is their only chance of life.'

'And about medical assistance? I can't leave you.'

'Bah!' said the doctor shortly. 'They don't want me.'

No one noticed his peculiar intonation, and matters were arranged so that the sick men should stay.

Next morning, as John Manton lay on his couch in the shaded room, he heard the gun fired soon after the captain and his brother-officers had been to say farewell.

'Look out, nurse,' he said to the ugly black

woman seated near his head; and his voice sounded very weak and strange.

'S, massah,' said the woman; and she went to the window. 'All de big white sail hang down, and de ship go sail along, and de boys shout.'

'Ah!' sighed Manton; 'and I am so weak. Go and tell Mr Burns that the ship has sailed, and that we are left behind—perhaps to die,' he added to himself.

The woman went into the adjoining room, and returned at the end of a minute.

'Why have you been so long?' said Manton, in a querulous whisper.

'Massah Burn say um want lilly drink o' water, sah.'

'Well?'

'An' I give um lil drop o' coolum drink.'

'Yes, yes; but did you tell him the ship had sailed?'

'S, massah.'

'And what did he say?'

'Say noting, massah. Can't say. All so weak. Only make lil whisper.'

'Well, you heard him?' said Manton feebly.

'Oh yes, massah; but massah no talk so much. Not good for um head.'

'But tell me what he said, and I will not speak.'

'Massah Burn whisper very small 'deed, and um say close in my ear, when I tell um ship sail away: "Berry good job too."'

#### CHAPTER VI.

Breakfast-time at the plantation, and Josephine busy in front of a glass, pinning a brilliant scarlet flower just at the side of her glossy black hair. She was very simply dressed in flowing creamy drapery, which showed her lithe figure to perfection.

'How late she is!' muttered the girl, as she glanced at her handsome face, and a faint tinge, the result of her satisfaction, sprang to her warmly hued cheeks.

At that moment, while her back was turned, Renée entered, and stopped short, smilingly watching as she saw how her companion was engaged.

'Why, Josee,' she cried, 'down so soon!'

'Yes, of course,' cried the girl. 'Have you not always been scolding me for being late?'

'Morning, girls,' said Captain Greville, entering through the French window. 'That's right: I want my breakfast.'

He kissed them both tenderly, Josephine last, and holding her with one arm as he patted her cheek.

'That's right, my dear,' he said. 'Glad to see you look so much brighter. You quite fidgeted me a little while ago. I was afraid you were going to be ill.'

'It was very hot then,' she said hurriedly.

'Nay, it was unusually cool,' said the captain, laughing. 'Why, girls, I must take you to the old country some day, and let you see really cold weather with ice and snow.'

He took his seat at the table, and noticed that his adopted child was as attentive to his wants as Renée.

'What is the news about the patients?' he said.

'Aunt 'Miramis says they have both had an excellent night,' said Josee eagerly.

'You have seen her this morning?'

'Yes, I just saw her and asked,' said Josephine quickly.—'Give me some more coffee, Renée, dear.—Papa, you are not making a good breakfast.'

'Oh yes, I am, child.—Well, that's good news about the sailor boys. I want to have them fit for service by the time *The Queen* comes back. 'Miramis is an excellent nurse, but somehow she is a woman I rather mistrust.'

'But she is very good and kind,' cried Josephine quickly. 'It is her manner that is against her.'

'I do not mind her manner,' said Renée quietly. 'She always seems to me insincere.'

'Ah well, never mind,' said the captain, 'so long as she does her duty.'

He took out a letter which had reached him a day or two before, and began reading it as he sipped his coffee. It was for the third or fourth time, for letters were rarities in those days at such an out-of-the-way island; and as he read, the girls kept silence, only exchanging glances twice, when Josephine looked at Renée furtively, and then flushed as if in resentment at being watched. On the second occasion, she turned away angrily, and Renée seemed pained, gazing at her adopted sister appealingly, and then sighing; and her thoughtful young face grew troubled, as she saw how Josephine kept her eyes averted.

As soon as the breakfast was over, the latter left the table and went out into the garden.

Directly they were alone, Greville said quietly: 'You have noticed how Josee has altered during the last week or two?'

'Oh yes, papa, and it has troubled me.'

'Troubled? Because she seems so animated and gay?'

'Yes, dear.'

'Oh, nonsense, child! *Femme souvent varie*. You are as changeable as she is. I am glad to see it.—Well, this will not do. I must get in the saddle and ride round before the sun gets too hot. I'll go up and see the sailors, though. I think I shall have them down and out in the garden.'

'Yes, papa,' said Renée, with rather a troubled air.

'Yes, my dear, I shall lock up the medicine chest now, and prescribe fresh air. Lucky for them I'm such a quack. One can't go on doctoring one's people all these years without knowing a little about our ailments. I did save your life, pet.'

'Yes, dear,' said Renée, clinging to him; 'but I never knew how bad I was.'

'No, I suppose not. And then you responded by saving mine.'

'Oh no, papa.'

'But I say, oh yes.—Well, I'll go up now.'

The captain went up to Burns's room to find that gentleman carrying on a conversation with his nurse; and drawing back unseen, he went into the next room, and then stopped short in astonishment.

'Josee, my child!' he exclaimed.

'Yes, papa dear, I have just brought Mr Manton

a bunch of these fresh flowers,' said the girl hastily.

'Yes, Captain Greville,' said Manton from the couch upon which he lay looking very white and thin. 'I don't know how I am ever to express my thanks for all the kindness I receive here.—Thank you very much for the flowers, Miss Maine. 'Miramis shall put them in water. I never knew how much pleasure flowers could give till I was sick like this.'

'Oh, it is nothing,' said the girl hastily, and she hurried away.

Greville's brow cleared as Josephine left the room, and he drew a chair to the side of the couch.

'Well, patient,' he said, 'how are you? Come,' he continued, laying his hand upon Manton's forehead, 'pleasantly cool. No headache?'

'Oh no, sir; only so dreadfully weak.'

'We'll soon get over that. You shall have help. Two of the boys shall carry you, and we'll have you down in the garden every day.'

'Ah!' exclaimed Manton, flushing. 'When shall we begin?'

'This morning—almost directly. I'll go and see my other patient, and then have arrangements made, and easy-chairs placed under the big ceiba.' Then, nodding pleasantly, he strode toward the other room.

'Shan't find Renée supplying flowers there, shall I?' he thought. 'No: rubbish! Only an impulsive girl's desire to show kindness.'

'Well, patient,' he said, rather boisterously, as he entered Burns's room, to find that the lady in attendance was the black woman Semiramis—

'well, patient, how are you?'

'Well, doctor, how am I?' said the young man, holding out his hand.

'Him berry bad, sah, and no get bit better,' said the woman volubly. 'Um no take notice what nurse say. Um do all as um like, and 'Miramis no use here 'tall a 'tall.'

'Oh yes, you are, old lady,' cried Burns; 'only you do want to coddle a man up rather too much.—I say, Captain Greville, it's very hard work lying here. When can you give me leave to go ashore—I mean, down below?'

'This morning,' said Greville, smiling.

'Then I shall be well in a week. I'm better already with the thoughts of it. But is old Manton coming too?'

'Yes: you shall both be carried down.'

'Here, 'Miramis, bring your stuff. I'll take it or anything else now.—Why, my dear host and doctor, this news is the best medicine I have swallowed yet.'

'I'm glad of it, my lad,' said Greville, smiling at the young man's light-hearted way.

'Thank ye; but, I say—you are too good to us: taking all this interest in a couple of strangers.'

'Oh no! not strangers,' said Greville, smiling. 'I have been a planter all these years; but I am still a sailor at heart, and your coming brought back the days when I was a frank young lieutenant like you, with plenty of the middies' berth clinging to me. I'm only too glad to welcome a couple of honourable English gentlemen to my house; so be quite at ease. My servants are yours for the time you are here. I only ask one favour of you.'



'Yes, sir. What is that?'

'Get well as soon as you can—not that I want you to go, but because I would rather have hale guests than sick.'

### LA MALMAISON.

O'er all there hung a shadow and a fear;  
A sense of mystery the spirit haunted.

VERY few tourists visit the dismantled Château and forsaken Park where, more than seventy years ago, the Empress Joséphine ended her eventful life, and where but a few years earlier Napoleon spent the only happy days of his restless existence. A few Americans annually cross the weed-covered court, a much larger number of Parisian *bourgeois* picnic-makers duly spend their summer Sunday afternoons in making merry over bread and wine on the mossy turf of the once well-trimmed lawns; but for the rest, the bats and the moles share the property with the speculative builder, whose myrmidons make the overhanging woods resound with hideous and discordant clamour of axe and hammer.

Guide-books rarely mention Malmaison. Even Murray and Baedeker each devote to it but a very small space, almost, one would think, as if by accident. For a few moments, then, and before the shadows of oblivion fall over the château, and while yet enough remains of the Park to make it still worth a pilgrimage, let us draw a picture of what it once was and what it now is.

The brightest days of Malmaison were between 1798 and 1810. In the former year the property was secured to Joséphine, wife of Napoleon Bonaparte, in her own right. Previous to this period, it had successively belonged to the Crown, and a private individual named Leconteux, who had considerably enlarged the domain, and from whom it was purchased for one hundred and sixty thousand francs by Madame Bonaparte. It was destined to see the rise and fall of the great General, and played a more conspicuous part in his career than either St Cloud, Compiègne, Fontainebleau, or the Tuileries, all of which are more or less associated with his name. It was in the silence of the dark woods of Malmaison, far removed from court and courtiers, and so unsuggestive of either, that the greatest campaigns of Napoleon were planned. It was during his residence here that the Directory was overthrown and he became First Consul; and it was Malmaison that witnessed the sad scenes, when, from an unworthy ambition, the First Consul decided to annul the marriage with his faithful wife Joséphine, and to marry the almost child-wife, Maria Louisa of Austria.

The play-hours of the great Napoleon, few as they were, may be said to have been spent only at Malmaison. He was intensely fond of its retirement, and his tastes were singularly simple and home-like, when away from the grim work of conquest. Joséphine, as the wife of the First Consul, was not an accomplished scholar in the etiquette of that position, much less in that of an imperial court. She was no artist; she was no musician. Her usual occupation consisted of crewel-work for covering her furniture; and in this she enlisted the services of the ladies

who visited her. Napoleon—until persuaded by others that his wife was not capable of fulfilling the duties of Empress—was himself delighted with this simplicity. He would sit by the hour in her society in those long evenings at Malmaison, attracted, as were all others, by a sweetness and quiet dignity such as few women of the 'Directoire' period possessed. She was fond of and excelled in 'tric-trac' (backgammon), and Napoleon would often join in the play with her. 'While at Malmaison,' his secretary records, 'Napoleon was a veritable father in the midst of his family circle. His abnegation of grandeur, his simple and unaffected manner, and the gracious familiarity of Madame Bonaparte, formed an inexpressible charm. The Premier Consul would enjoy being read to, though he rarely read himself. The one thing to which he would never listen was poetry. "It is a poor science," said he.'

Joséphine's favourite employment—it was more than a diversion—was horticulture. She was not in any sense a scientist. She loved nature for Nature's sake, and her hot-houses and gardens were her long and lasting delight. In those days, such pleasures were costly; and more than once after her divorce, complaints were made that she overdraw her rather large annuity. Napoleon was himself liberal, but the State interfered, and on one occasion he was compelled to delegate a minister to warn her of the consequences of her horticultural extravagance.

The character of this beautiful woman was beyond all praise. Napoleon's excessive ambition was the main source of all the evils associated with his name. He was not vicious, like some of the kings of France in the two previous centuries. Joséphine had but to contend with an insatiable craze for power in her leonine husband. While in her presence, the Premier Consul was advised and directed by her, unconsciously to himself. But when away on his campaigns, his instincts prevailed. On one of his journeys to Italy, Joséphine showed her wisdom in not leaving him. She accompanied him through day and night stages the whole way, enduring with heroic patience and fortitude privations that only old soldiers were used to. Her whole life was one long sacrifice, one noble record of self-abnegation.

The years from 1810 to 1814 were sad and mournful. They were associated wholly with the enforced retirement of Joséphine, and ended with her premature death. From the moment that Napoleon quitted his noble wife, the tide of his prosperity began to ebb. Great victories were discounted by great disasters, until the failure of his Russian campaign compelled his abdication at Fontainebleau on the 4th of April 1814, exactly four years after his marriage with Maria Louisa. For ten months during his exile in Elba, France loses his figure; and again he is hailed as Emperor in the reign of the Hundred Days. On the disaster at Waterloo, he once more finds a refuge at Malmaison, wifeless and almost friendless. His faithful consort Joséphine, as constant when his divorced as when his acknowledged wife, had passed away just a year before this return. The Empress Maria Louisa had already gone back to her father's court at Vienna, as a voluntary hostage of the Allies, where her affec-

tion for Napoleon, if she possessed any, was being rapidly transferred to a certain Count Nipperg, whosemorganatic wife she afterwards became. Her little son, 'le Roi de Rome,' subsequently 'Duc de Reichstadt,' had also been transferred to the care of his Austrian grandfather.

These last few days of Napoleon at Malmaison will ever remain the most marked in its history. Deeply attached to his step-children—the offspring of Joséphine by her first marriage—as much for their mother's sake as for their own intrinsic worth, he found in Hortense Beauharnais the only woman left to console him in the time of his trouble. She herself was fresh in her grief at the loss of her beloved mother; he, in turmoil of soul at the loss of everything—crown, power, and even the affections of the people. His one-time traitor, Fouché, had usurped authority, or obtained it by foul means, and had found his opportunity of revenge by refusing to publish a proclamation in the *Moniteur* which Napoleon had addressed to the army! Nemesis was indeed on his footsteps, her very shadow thrown over all. The promptitude which characterised the General's action in critical moments forsook him now; but Malmaison, hallowed by the sanctified memory of Joséphine, alone seemed to soothe his crushed and wounded spirit.

His secretary, Baron Minéval, records this period in these words: 'I see before me Malmaison, where had shone the aurora of his greatness, and which to him must have recalled the sweetest and bitterest of remembrances. I cannot approach this château without emotion: I again see him clothed with power, and crowned with an aureole of a great personal glory, passing the time in this delightful retreat, with charming society, the most amiable and the best of women—the embodiments of every grace; surrounded by the members of his family and some faithful servants, and partaking in their joys; seeking, among the rich foliage of the gardens and park, relaxation from work; or scattering broadcast the treasures of his fertile imagination in easy converse, sometimes serious, sometimes joyful, but always full of original and profound thoughts. He had a select table, but the salon was open to all. The venerable Archbishop was received with a deference due to his sacred calling, and treated with filial affection. Kings and princes came to salute his Imperial Majesty. The rupture of a union formed on mutual affection, and dissolved entirely through political reasons, had estranged Napoleon from Malmaison, which in days gone by had been the scene of confidences the most solemn and of affections the most pure, and had thrown him into a new theatre of pompous courts which left little but bitter chagrin. A premature death had taken away the Empress, who was so great an ornament, just at the moment when the crown had fallen from her consort's head. Napoleon returned to bid a last adieu to the tomb of his first—and the only—wife of his choice. He was received in his adversity by his adopted daughter, Queen Hortense, whose generous and filial care consoled his troubled days. I see before me the faithful courtiers prepared to run all chances of his misfortune even now for their illustrious chief. The Duke of Rovigo, energetic and devoted, whose personal adhesion to Napoleon had always

been so useful; General Bertrand and his wife, truest in adversity; Monsieur and Madame de Montholon, who, like General Bertrand, voluntarily shared in his exile; Gourgaud, chivalrous and imaginative; Las Cases and his little son; and Marchand, whose only recompense was the title he received of "friend of Napoleon."

On the 29th of June 1815, the Prussians closed round Argenteuil and Châton, the neighbouring villages to Reuil, near to which is situated Malmaison. Not a moment more could be left to chance. At half-past five in the evening General Becker presented himself before the ex-emperor: 'Sire, all is ready.' The great man replied not a word. He crossed the Hall into the Park, weeping. He bade adieu to all present. His beloved Hortense he tenderly embraced; then, with one last look at the château and all its surroundings, silently waved a last farewell. Alone he crossed the Park to a retired gate, where, entering a carriage, he directed his journey towards Rochefort, purposing from that seaport to take ship for the United States; but instead of this, sixteen days later he surrendered himself to Captain Maitland of the *Bellerophon*, claiming, as a last chance, the protection of British laws! A few days after, Malmaison was possessed by the allied armies.

The rest of its history is brief and decadent. On the Restoration, Prince Eugène, the brother of and on behalf of Queen Hortense, resold much of the Park and most of the pictures, while the remainder were sent to his seat at Munich, a few only of the relics finding their way to the museums of Versailles or the Louvre. In 1826 a Swedish banker bought the property, and held it until his death in 1842. It was then purchased by Maria Christina, and occupied by her for a short time upon her abdication of the Regency of Spain; and subsequently was sold by her to Napoleon III., who made it a sort of show-place until 1870. During the siege of Paris, the shells from Mont Valerien directed to the outposts of the German army encamped round Bougival, caused it some damage.

And what is left to-day to remind us of the past? Reuil is a large village, containing a handsome *mairie*, cavalry barracks, and numerous appendages to the army service. The village square encloses the church, with its tall and graceful spire, surmounted by an exceptionally long vane, on which Chanticleer, the winged symbol of Gaul, presides. In the church itself, built by Lacroix, by order of Napoleon III., is much to remind one of the Bonaparte family. Here is preserved, untouched by the hands of violence, all that was most prized by the last Emperor—the tomb of his mother Hortense, and of her mother the Empress Joséphine. The style of the church is mixed; externally not pleasing. The interior is better harmonised. On the right of the high altar is the tomb of Joséphine, the work of Gilet and Dubuc, and over it an exquisite statue by Cartelier. The Empress is represented kneeling. Beneath is the simple inscription, 'A JOSÉPHINE, EUGÈNE ET HORTENSE, 1825.' At right angles with this tomb, and facing the nave, is that of the father of the Empress, the Count Tascher de la Pagerie; while opposite, and facing the tomb of Joséphine, on the left of the altar, is a monumental group

erected to the memory of Queen Hortense by her son, Louis Napoleon. It is the work of Bartolini. The Queen kneels on a cushion, her guardian angel hovering over her. Beneath is inscribed, 'LA REINE HORTENSE, son fils NAPOLEON III.' Below this group of statuary, and reached by a door and a flight of steps, is the actual tomb of Hortense, situated in a small chamber, and lit with a large bronze lamp. It is in beautiful preservation, only crumbling slightly in one or two places. We asked the old verger if any of the members of the family ever came to visit it and see to repairs. The answer was sadly given that they *could* not! The inscription on the tomb is a long one, and need not be here quoted, as it is but a list of titles and family history. Hortense Beauharnais was married on the 3d of March 1802 to Louis Napoleon, king of Holland, and died at his castle of Arenenberg, October 5, 1837. This made her also sister-in-law, as she was previously step-daughter, to Napoleon I.

But the church contains other remembrances. The bas-relief in bronze of Christ at the Tomb, removed from the little chapel of Malmaison, forms the façade of the high altar. And an oak-carved chair, presented by Louis Napoleon, on which is inscribed the number of the 'plébiscite' calling him from Republican to Imperial power—7,500,000.—But more artistically valuable and beautiful is the organ, a perfect piece of carving, on which appear these words in gold letters: 'Ouvrage du Sculpteur Florentin Baccio d'Agnolo, exécuté à la fin du XV<sup>e</sup> S. pour l'église Sainte Marie Nouvelle de Florence, est un don de Napoleon III. (1863).'

The roads in the old quarters of the village are mostly lime avenues, the trees being generally trimmed in two sides of a square, so that the branches from either line of trees almost meet in the centre, and form a protection from sun and rain alike for the roadway, even more than the path. The same clear and distinct iron plates bearing the name of the avenue—or 'Boulevard,' as it is here written—are still affixed to the walls, as in the days of Louis Philippe, if not earlier. Taking a succession of these roads from the square, is reached one at right angles—the 'Avenue de la Malmaison,' in these October days resplendent in the richest tints of green and gold, for the trees on either side are planes, far more lovely in autumn than at any other period of the year. At the upper extremity and termination of the avenue are three gates: those to the left lead to private property; those in front to the Park only; while those on the right open directly on the 'cour d'honneur' of the château. The gates are fastened, and on a tattered poster affixed to a board, one reads: 'Adjudication en la Chambre de Notaire de Paris sise Place du Châtelet, par de Ministre M. Dufoure, l'un deux, le Mardi, 5 Juin 1888, à midi, du Château historique de la Malmaison,' &c. And then over the lower part of this condemnatory notice, which is by it half obliterated, is another: 'Le bureau de Ventes des Terraines de la Malmaison est dans le Château.'

Rattling the chains that held the rusting gates together, brought out on our visit a girl, not the neat little daughter of the *concierge* to a mansion, but the offspring of the broker's man, the man, in fact, in possession. She rather reluctantly un-

fastened the gates, assisted by that key which generally proves irresistible, and we crossed the weed-covered court. The château lies immediately in front, not where a similar building in England would have been placed, among the woods or more retired parts of the Park. A few straggling creepers hang over the walls of the garden adjoining; but not a leaf is found to cover the nakedness of the building itself, which, being architecturally unpicturesque, sorely stands in need of Nature's garb of green. By a side-door we entered. Desolation everywhere! Beyond a coverless billiard table, no furniture visible. The plaster falling from the ceiling, the few remaining oak panels half torn from the walls, and even the chapel outraged and in dismal ruins. On the upper floors, if anything, the state of things was worse. On the broken doors are written military orders, for during a period of five years subsequent to the war, the château was converted into barracks. The bedroom of Napoleon I. is a small apartment seventeen feet square. The view from it is not extensive, for the elevation is low, and surrounded by the well-timbered Park. One cedar of Lebanon stands guard on the lawn, beneath the windows. Adjoining this room, and connected by an antechamber, is the bedroom of Joséphine. It is oval. The decorations have all, save the ceiling, vanished. There, in distemper, appear the remains of what was once a blue sky. The walls of the château are unusually free from the pencilled autographs of the great unknown, or the senseless comments of ignorant tourists; but here we found one and one only. It ran thus: 'Dieu permettez qu'un Napoleon vienne au plutôt restaurer cette maison que des . . . laissent tomber en ruine.'

We walked through the scores of tiny apartments, less even in dimension than those of the 'Trianons;' and, though the girl objected, we mounted to the topmost story, in the hope of obtaining a view over the Park. In this we were disappointed, for the windows were skylights, and only used by the bats. One of these little brethren we dislodged, and, as he seemed in a state of semi-torpor, placed him on a window ledge where the warm October sun might restore his vitality. There were scores of these little creatures suspended from the roof, and, from what we could see, they had not received a visitor for many a long day.

We descended to the Park, but were not allowed to enter the gardens, where the trees were mostly planted by Joséphine; for they have long since passed into private hands. That part of the estate as yet unabsorbed by the tasteless builder is still beautiful, and the 'Temple de l'Amour,' where Napoleon is said to have planned many of his campaigns, yet exists, and a tiny cascade in front of it ever musically falling into a pool beneath. There is still left sufficient to make a charming residence for some appreciative purchaser, who need not be excessively wealthy to maintain it.

But what is more delightful than the Park, are the overhanging woods, through which wind the greenest of green lanes. The beech-trees—far from common in Seine-et-Oise—are here growing in perfection; and oaks, conifers, birch and mountain-ash reach an unusual size. The

bridle-roads are deep in moss, over which trail the wild strawberry and bramble, whose leaves are as brilliant in decay as those of the Virginian creeper. The magpie screams as he settles on the highest branches of the elms; the large migratory locust and the dragon-flies flit over the green sward, and the grasshoppers chirp around one's feet. All else is silence—the silence of a dead and almost forgotten past!

### NICKEL AND NICKEL-STEEL.

NICKEL has of late come into considerable prominence, not so much through its own intrinsic qualities, as through the alloy it is capable of forming with the important material, steel. Nickel-steel has for some little time past occupied the close attention of our most eminent metallurgists; and whilst already occupying a recognised position in applied science, both scientifically and commercially, bids fair to develop into considerable importance, and to provide all those engaged in constructional work of every class with a material of very superior strength, elasticity, and durability. In view of the importance attaching to nickel-steel, we now purpose laying before our readers some brief account of nickel itself; and then to conclude our remarks with some notice of the new alloy formed with steel.

So far back as 1751, nickel was discovered by Cronstedt, who, afterwards finding it largely in 'Kupfer-nickel,' gave it the name it now bears, Kupfer-nickel, or 'Goblin Copper,' being a term of contempt applied by miners to a certain class of copper ore which is 'tricky'—namely, promising, but not yielding copper. It is an interesting fact in connection with nickel that it is contained in the sun's atmosphere and is found in all meteoric iron.

Nickel ores are in general complex mixtures, being associated with one or more foreign metallic ores. Rich oxidised nickel ore was discovered in New Caledonia in 1875, and has since been imported into Europe in yearly increasing quantities. These deposits are free from arsenic, and find their way principally to France. Nickel is found in Canada around Lake Huron; and the Sudbury deposits, covering only thirteen thousand acres, are estimated to contain six hundred and fifty million tons of the ore; whilst Dr Bell, the Assistant-director of the Geological Survey of Canada, speaking of the Huronian belt, which stretches for more than six hundred miles east and west, gives it as his opinion that the search for nickel throughout that promising region is only in its infancy.

Turning now to the properties of nickel, we find it attracted by the magnet, and possessing specific gravities of 8.3 and 8.7 for ingot and forged metal respectively. Nickel can be welded at a red heat like wrought-iron, and does not tarnish even on long exposure to air; water has no action upon it and even such fumes as those of sulphuretted hydrogen fail to blacken it. A well-known alloy of nickel—German silver—is composed of three parts of copper to one part of zinc and one of nickel; whilst in the United States, in Belgium, and in Germany, an alloy of one part of nickel to three parts of copper is used for minor coins.

Passing now to consider the alloy made by nickel with steel, one of the first important properties obtained is that of non-corrodibility. It is well known that steel is more liable to rust than iron, such fact forming a drawback to its substitution for that metal; and the immunity from corrosion enjoyed by steels rich in nickel is a point of considerable interest; whilst even steel poor in nickel is found more proof against rust than that in whose composition nickel does not enter.

The superior strength obtainable from nickel-steel will readily suggest the advantages derivable from its employment: smaller scantlings and thinner plates can be employed; and saving in weight will add gracefulness and lightness to the structures under fabrication. Assuming the strength of iron at about twenty tons per square inch, and that of the ordinary mild steel of commerce at about thirty tons per square inch, there seems every indication that nickel-steel can be produced reliable and satisfactory in every respect with a strength of forty tons per square inch, or with additional strength as compared with mild steel and iron in the ratios of four to three, and two to one.

Already in the manufacture of armour-plates nickel-steel has made its mark, and sufficient has been said to demonstrate its superior qualifications for every class of work the engineer, be he civil or mechanical, or the architect may be called upon to design.

Into the question of cost it is foreign to our purpose to enter; but all experience has shown a gradual cheapening in price of production as a material becomes in demand; and this and the discovery of new sources of nickel cannot fail to have a beneficial effect on this new alloy, which seems destined at no distant date to play an important part in the metallurgical world.

### LAST YEAR'S LEAVES.

OVER sullen ribs of snow,  
And the bitter, brown March grass,  
As the eager east winds blow,  
Before them as they pass,  
In a swirl the dead leaves go.

Vagrant ghosts of last year's leaves  
Hurried hither—hurried thither;  
There were swallows in my eaves  
When I watched them wane and wither,  
And my fields were full of sheaves.

I have seen the uplands bare,  
And the sleet 't the swallow's nest;  
I have closed against Despair  
The doorway of my breast,  
With a hasp to hold him there.

But the sere leaves wander yet  
From a year for ever fled,  
Like the sleepless, vain regret  
For the buried and the dead,  
That my heart will not forget.

S. REID.

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